

TECHNICAL MANUAL

280-B

NOISE REDUCTION INTERFACE

IMPORTANT INFORMATION **WHEN USING THE 280B INTERFACE**

BATTERIES: CAUTION - WEAK BATTERIES MAY BLOW 280B FUSE

THE 280B USES A WIDE INPUT RANGE POWER CONVERTER TO PROVIDE A REGULATED 24 VOLTS FOR THE NOISE REDUCTION CARDS. WHEN THE BATTERY VOLTAGE FALLS THE CURRENT REQUIRED INCREASES. SHOULD THE BATTERY VOLTAGE BECOME LOW ENOUGH (8 TO 9 VOLTS) THE CURRENT CAN EXCEED THE RATING OF THE PROTECTIVE FUSE. BATTERIES THAT APPEAR O.K. IN THE UNATTACHED NAGRA IV-S MAY FAIL QUICKLY WHEN TRYING TO POWER BOTH UNITS. (USE ONLY 2AG FUSE 2 AMPS)
USE ONLY FRESH ALKALINE TYPE CELLS AND CHANGE AS SOON AS POSSIBLE SHOULD LOW POWER INDICATOR FLASH. NICAD CELLS WITH 4 AMP HOUR RATING OR BETTER ALSO MAY BE USED, WITH REDUCED LIFE. (SEE BATTERY CHART IN TEXT)

THE 280B DRAWS CURRENT WHEN THE NAGRA IV-S IS IN "STOP" MODE. SELECT POWER AWAY FROM BATTERIES WHEN NOT IN USE.

POWER SUPPLY:

NAGRA "ATN" POWER SUPPLIES WILL NOT POWER BOTH THE 280B AND THE RECORDER. A 15 WATT REGULATED 24 VOLT SUPPLY WITH LOW NOISE AND RIPPLE WILL POWER BOTH UNITS.

INPUT CABLE:

THE CABLE FEEDING THE LINE INPUT OF THE 280B MUST NOT HAVE SERIES RESISTORS. SEVERE LEVEL LOSS WILL WILL RESULT.

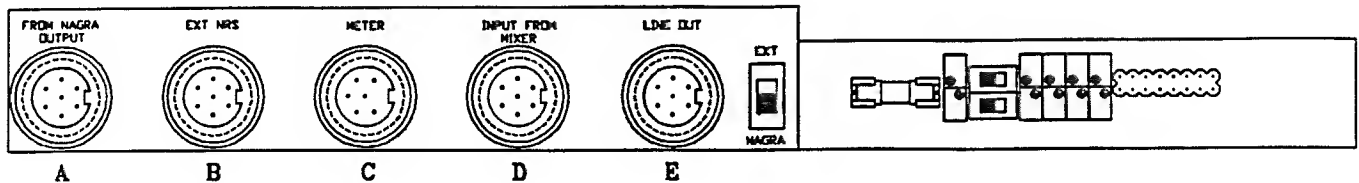
MODIFICATION OF NAGRA IV-S FOR -10R IN "TEST"

"TEST" POSITION ON THE NAGRA IV-S MAIN FUNCTION SWITCH WILL CAUSE A FEEDBACK LOOP TO BE FORMED UNLESS THE RECORDER OUTPUTS "-10R" IN THIS SETTING. BRYSTON CIRCUIT BOARD "280B-NAG" SHOULD BE INSTALLED IN RECORDER TO PREVENT THIS PROBLEM FROM OCCURRING. INSTALLATION DETAILS ARE INCLUDED.

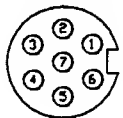
AUDIBLE FEEDBACK LOOP DURING PLAYBACK:

CARE SHOULD BE TAKEN DURING DECODED PLAYBACK THAT THE "TAPE/DIRECT" SWITCH ON THE IV-S RECORDER IS IN THE "TAPE" POSITION. SELECTING PLAYBACK WITH THE IV-S "TAPE/DIRECT" SWITCH SELECTED TO "DIRECT" WILL CAUSE THE SYSTEM TO FEEDBACK, CREATING AN UNPLEASANT MONITORING CONDITION.

280B-CONNECTOR BOARD

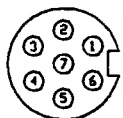


A - FROM NAGRA OUTPUT



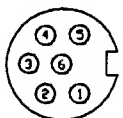
- 1 = CHANNEL 2 (RIGHT) FROM RECORDER INPUT
IMPEDANCE 5K - ODB = 1V
- 2 = -10V FROM NAGRA IV-S (50MA MAX)
- 3 = CHANNEL 1 (LEFT) FROM RECORDER INPUT
- 4 = POWER INPUT FROM NAGRA IV-S
- 5 = -10R VOLTAGE WHEN NAGRA IV-S IN RECORD
- 6 = STOP CONTROL FOR NAGRA IV-S
- 7 = GROUND

B - NRS LOOP



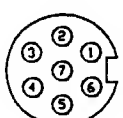
- 1 = CHANNEL 2 (RIGHT) INPUT FROM DIRECT AMP
IMPEDANCE 47K - ODB = 560MV
- 2 = -10V FROM NAGRA IV-S (50MA MAX)
- 3 = CHANNEL 1 (LEFT) INPUT FROM DIRECT AMP
- 4 = N/C
- 5 = CHANNEL 1 (LEFT) TO RECORDER ENCODED OUTPUT
- 6 = CHANNEL 2 (RIGHT) TO RECORDER ENCODED OUTPUT
- 7 = GROUND

C - METERS



- 1 = CHANNEL 1 (LEFT) CAT. 280 METER OUTPUT.
1.85V FOR -80B MODULOMETER
- 2 = GROUND
- 3 = CHANNEL 1 (LEFT) MONITOR BYPASS OUTPUT
- 4 = CHANNEL 2 (RIGHT) MONITOR BYPASS OUTPUT
- 5 = EXTERNAL POWER INPUT (-10V TO -30V)
- 6 = CHANNEL 2 (RIGHT) CAT. 280 METER OUTPUT

D - INPUT FROM MIXER



- 1 = CHANNEL 2 (RIGHT) EXT. LINE INPUT
IMPEDANCE 5K INPUT LEVEL TRIM
- 2 = -10V FROM NAGRA IV-S (50MA MAX)
- 3 = CHANNEL 1 (LEFT) EXT LINE INPUT
- 4 = POWER FROM SELECT SWITCH
- 5 = CHANNEL 1 (LEFT) EXT MONITOR INPUT
- 6 = CHANNEL 2 (RIGHT) EXT MONITOR INPUT
- 7 = GROUND

E - LINE OUTPUT



- 1 = CHANNEL 2 (RIGHT) LINE OUTPUT
IMPEDANCE > 600 OHMS ODB = 1V
- 2 = -10V FROM NAGRA IV-S (50MA MAX)
- 3 = CHANNEL 1 (LEFT) LINE OUTPUT
- 4 = POWER FROM SELECT SWITCH
- 5 = -10R FROM NAGRA IV-S
- 6 = STOP CONTROL FOR NAGRA IV-S
- 7 = GROUND

NOTE:

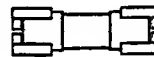
MAX CURRENT FOR ALL -10V
TERMINALS IS 50MA MAX.
AN EXTERNAL STOP CONTROL
WILL NOT BE INDEPENDENT OF THE
INTERNAL STOP ROLL FUNCTION

POWER SELECT SWITCH



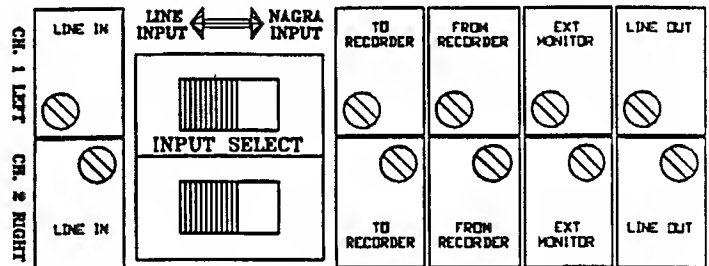
UP POSITION = CON C PIN 5 (-10V TO -30V)

DOWN POSITION = CON A PIN 4 (FROM NAGRA)

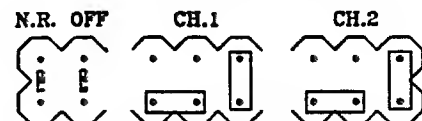


FUSE - USE ONLY 2AG-2 AMP

LEVEL ADJUSTMENTS



OPTION JUMPERS



NORMAL MONITOR MODE:
DIRECT MON FOLLOWS CAT. 280 CARD
LINE OUT FOLLOWS DIRECT/TAPE SWITCH

* N.R. OFF FOR ALIGNMENT ONLY
NEVER RECORD USING THESE JUMPERS.



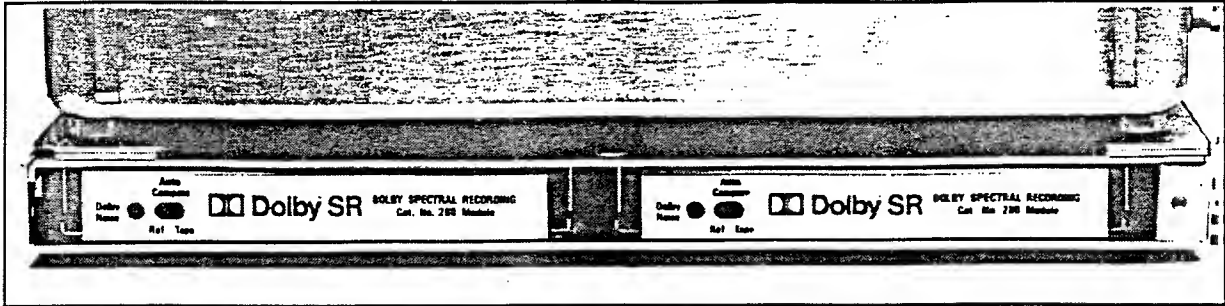
EXTERNAL MONITOR MODE:
MONITOR TO EXTERNAL INPUT
LINE OUT FOLLOWS CAT. 280 CARD

BRYSTON Ltd.
57 Westmore Dr. Rexdale, Ont. M9V 3Y6 (416)746-1800

BRYSTON 280B

OPERATION PROCEDURES

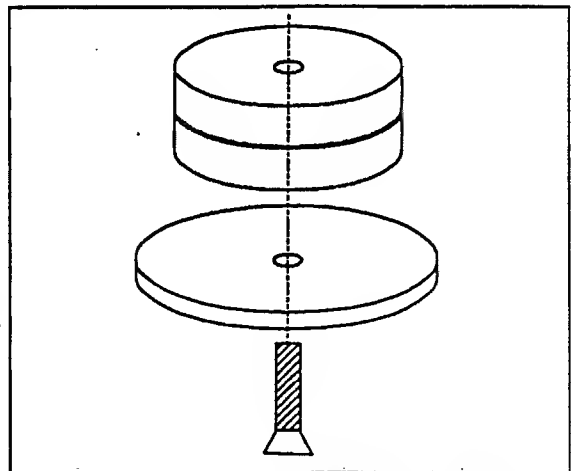
INSTALLATION OF CAT. 280 CARDS: Before installing any Dolby Cat.280 cards it is necessary to set the "usage mode" three position switch to "360". This switch is located to the right of the edge connector of the Cat280 card. Remove the four screws holding the back cover and insert two noise reduction cards in the spaces provided. Replace the back cover and screws.



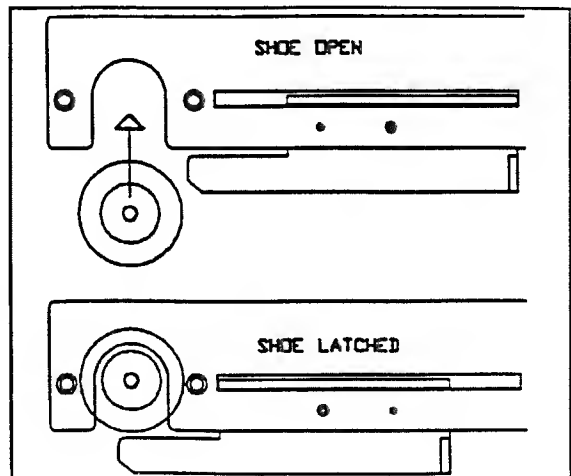
MOUNTING: The Nagra may be securely attached to the 280B by removing the feet on the recorder, and replacing them with the washers, nylon spacers and screws supplied.

NAGRA IV-S: Remove the feet from the recorder. The mounting washer and *two* nylon washers are fastened to the recorder with the M3 x 16mm flathead screws. The metal mounting washer should be positioned with the nylon at the bottom.

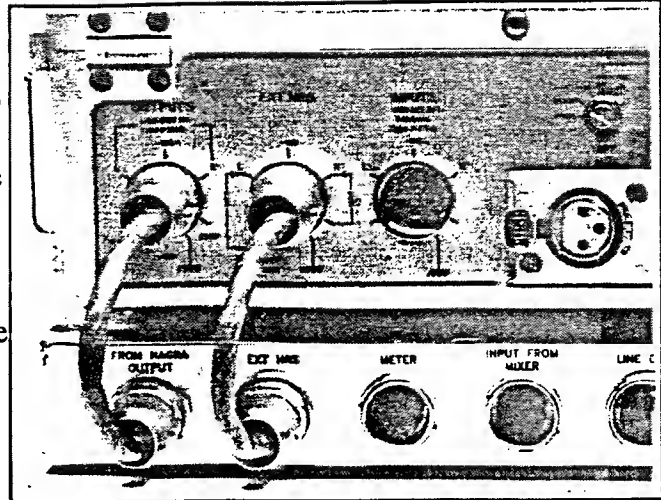
NAGRA IV-S-TC: Remove the rubber part from the Nagra feet only. Use a single nylon washer with mounting washer and fasten with the M3 x 16 mm screws. Position the metal mounting washer with the nylon at the bottom.



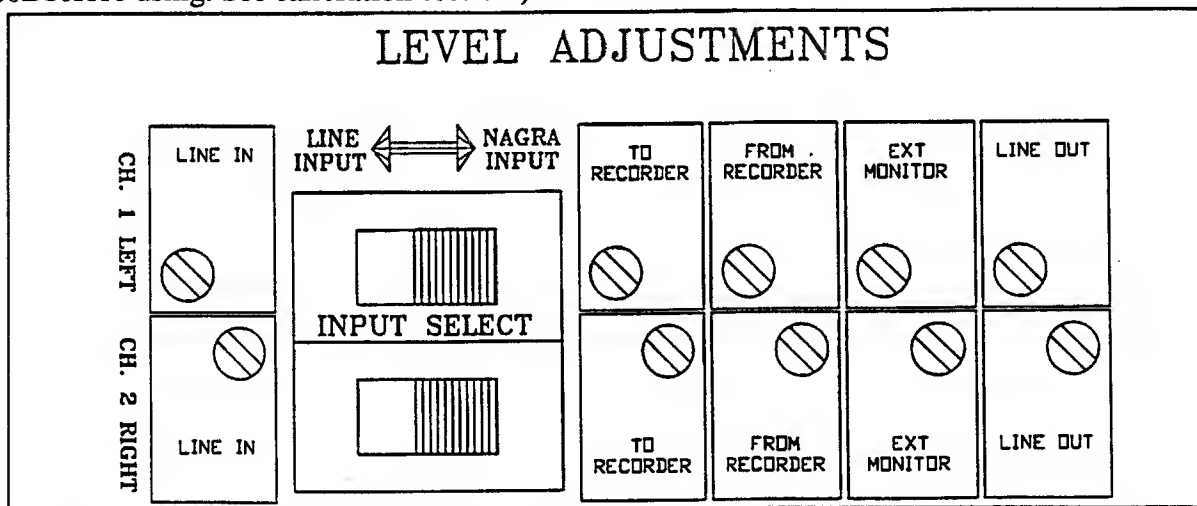
The right side mounting bracket contains two sliding shoes which lock the mounting washers into place. Slide each shoe to the open position and set the recorder on top of the 280B so the mounting washers are just to the right of the openings in the mounting plates. Move the recorder to the left until all four mounting washers are firmly installed in the mounting plates. Slide the locking shoes apart until they latch.



CONNECTIONS: Two 7-pin cables are required to link the Nagra IV-S and the 280B together. Connect one cable between the "OUTPUTS" connector on the Nagra and the "FROM NAGRA OUTPUT" connector on the 280B. The other cable must be installed between the "EXT NRS" connectors on both units. Two 7-pin cables are supplied with the 280B. Extra cables are available from BRYSTON, (Part # 280B-SV70-07).



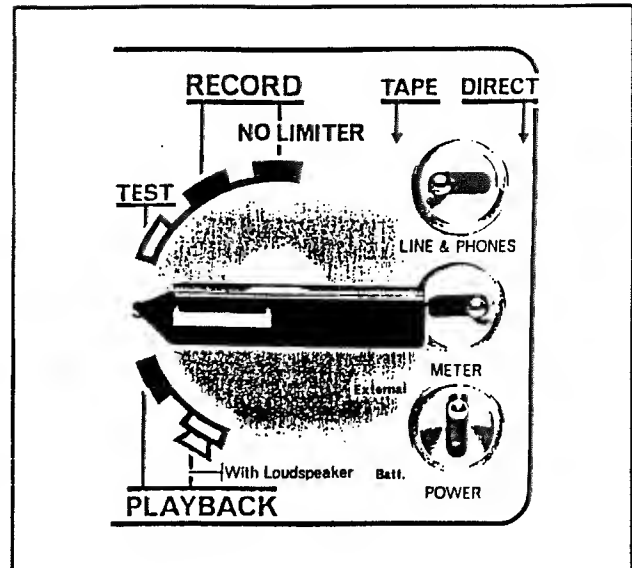
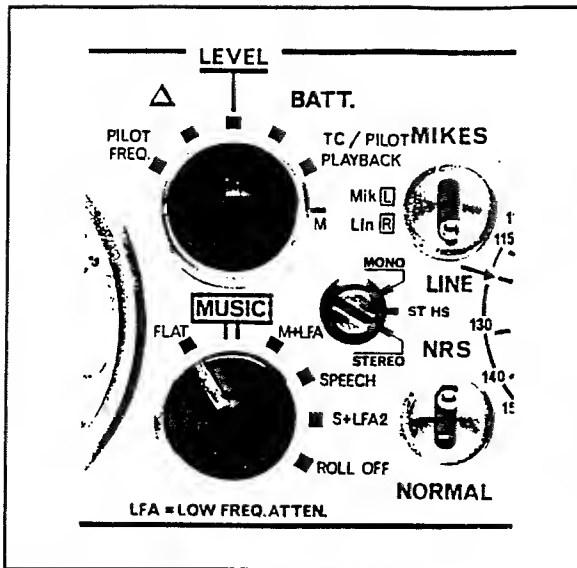
INPUTS: The 280B will select input either from the Nagra input section or from an external source, or both on a per-channel basis. The input selectors are located in the "ADJUSTMENTS" compartment on the left side of the 280B. To select the input source remove the two screws covering the compartment and select the input desired. (An external input will have to be calibrated to the 280B before using. See calibration section.)



POWER: The POWER SELECT switch is located next to the ADJUSTMENTS section. When the switch is in the down position, the 280B receives power from the Nagra IV-S. When in the up position, ("EXT"), power input is from pins 5 (-) and pin 2(+) of the "METER" 6-pin connector. External power supply may be in the range of -10 to -30 volts DC with an output power of 15 watts. (When using Nagra A/C supplies to power the recorder it will be necessary to power the 280B with a separate supply. Power supply part # 280B-ELP-24, (available from BRYSTON), will power both the Nagra IV-S and the 280-B from the same source.

BATTERY POWER: The LOW POWER indicator can be set to any threshold within the input power range. The normal threshold for Alkaline or NiCad type batteries is -12v, and is the factory setting. External batteries with higher voltages may require adjustment of the threshold trim pot, accessible through a small hole in the top, to the left and rear of the DOLBY NOISE switch.

*For maximum battery life use the **POWER SAVE MODE**. (see Power Save)*



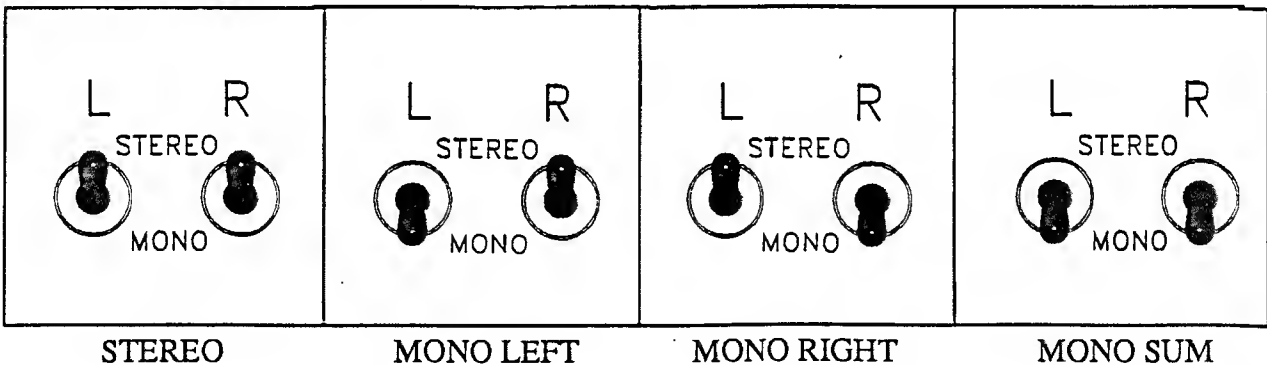
NAGRA SETTINGS:

A - Select the **NRS** position (up) on the NRS / NORMAL switch

B - Select the **TAPE** position on the TAPE / DIRECT switch. *Do not place this switch in the DIRECT position, or feedback will occur when playback is selected.* (For monitoring purposes, only the TAPE/NORMAL switch on the 280B should be used).

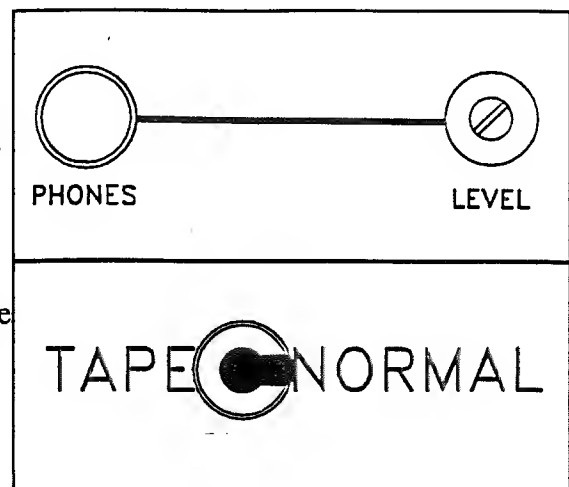
C - Select appropriate power source. (See previous section)

280B SETTINGS: The headphone monitor has four options.



The headphone jack (**PHONES**) is located on the front panel and the screwdriver adjust control (**LEVEL**) to the right controls the gain of the phones. Phones to be used should be 50 ohms or greater. Phones are muted during power-up and power-down, and when the SLATE oscillator is running.

The **TAPE/NORMAL** switch selects what the phones are monitoring. **NORMAL** position monitors input during recording and decoded playback when reproducing. **TAPE** position monitors the recorder output for confidence checking.



ROLL/STOP: When the Nagra IV-S main function switch is selected to Record or Playback, the recorder will not roll tape unless the ROLL/STOP switch is in the ROLL position. Switching to the STOP position will cause the tape to stop rolling.

NOISE: Dolby Noise is filtered white noise used to check recorder system response. If possible, 30 seconds of Dolby Noise should be recorded on each new reel of tape. During playback of Dolby Noise with the NOISE switched ON, the system will enter AUTO-COMPARE mode which allows an audible comparison of the recorder playback and the original Dolby Noise. (See Auto-Compare section). **NOTE:** When the NOISE switch is ON, only Dolby Noise will be recorded and monitored.

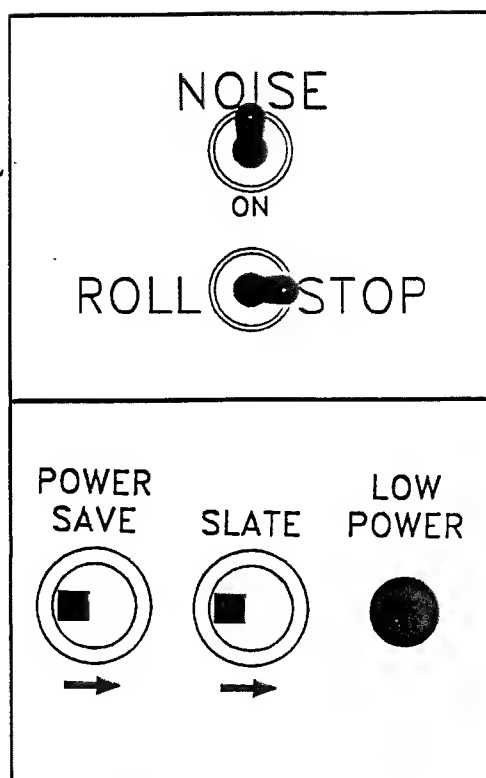
POWER SAVE: This switch works in conjunction with the ROLL/STOP switch and is intended for use during battery operation. When POWER SAVE is selected, (switch to the right), power is applied to the Dolby Cat. 280 cards only when the tape is rolling. When in POWER SAVE the 280B will monitor the input signal in the STOP mode. When the recorder is rolled and power applied to the Cat. 280 cards, the monitor switches to the output of the Cat. 280 cards. Headphone muting will occur during power-on-and-off to the Cat. 280 cards.

POWER-SAVE works on playback as well, with the monitor switching to input when the ROLL/STOP switch is in the STOP mode. When the recorder is rolled the monitor switches to decoded playback.

SLATE: When selected, (switch to the right), the 280B will print two short tones, the first about 40Hz, followed by a tone of about 1000Hz. These tones are recorded when the ROLL/STOP switch is switched from ROLL to STOP. The tones provide a break between takes as well as indicate correct Dolby function. The tones are generated at equal level but are processed differently by the Cat. 280 cards. The Nagra modulometer will show the low-frequency tone to be recorded about 6dB lower in level than the mid-frequency tone. Upon decoding these tones during playback, the equal levels will be restored. This also allows a visual check of the Encoded/Decoded status of any tape.

LOW POWER: The 280B will indicate a low power condition by flashing the LOW-POWER LED on the right side front panel. The threshold for the led is adjustable, but is factory set for -12V, which is the low voltage point for NiCad batteries. The led will also flash should the fuse in the 280B be blown or the POWER select switch be selected to EXT with no power applied.

ENCODE: The front panel LED labeled ENCODE will light when the Nagra IV-S is in the record mode, which indicates the Dolby Cat. 280 cards are encoding the audio to the recorder. When the LED is not lighted, the Dolby Cat. 280 cards are in decode mode for playback, or in "Power Save".



STOP: In the STOP mode, the only power consumed by either the Nagra or the 280B is in the mute-on-start relay circuit. This power draw is minimal; however, to protect from any current drain, turn either the Nagra or the 280B POWER switch to External for long off times, or storage.

TEST: TEST POSITION MUST NOT BE USED UNLESS THE NAGRA IV-S HAS BEEN MODIFIED WITH BRYSTON'S 280B-NAG CIRCUIT BOARD. This modification provides -10R in the TEST position. Without the modification, TEST will create feedback in the system, which will be monitored by the headphones.

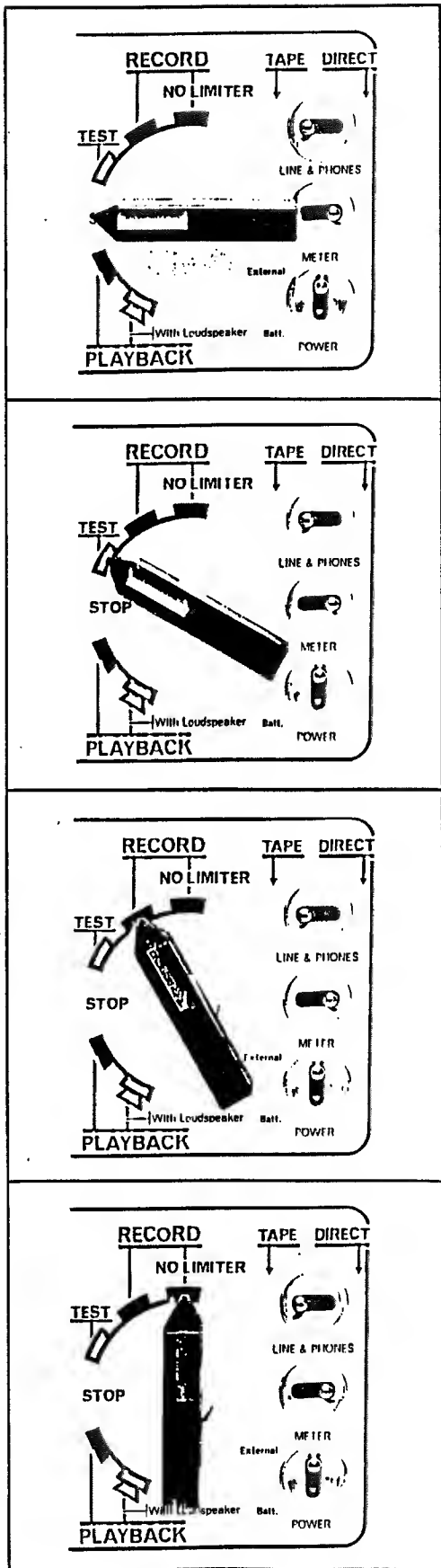
RECORD WITH LIMITER:

Recording with the limiter could create dynamic errors in the Dolby SR. With the increased dynamic range of Dolby SR, the input levels on the recorder modulometer need never go above 0dB, (See below for monitoring).

RECORD NO LIMITER:

(Recommended recording position). Switching the TAPE/NORMAL switch on the 280B to NORMAL monitors the input signal. The TAPE position monitors the Nagra output which will be encoded playback.

In POWER-SAVE the NORMAL monitor follows the input in the STOP mode, and the Cat. 280 monitor output when rolling. In TAPE, the monitor always follows the Nagra IV-S output.



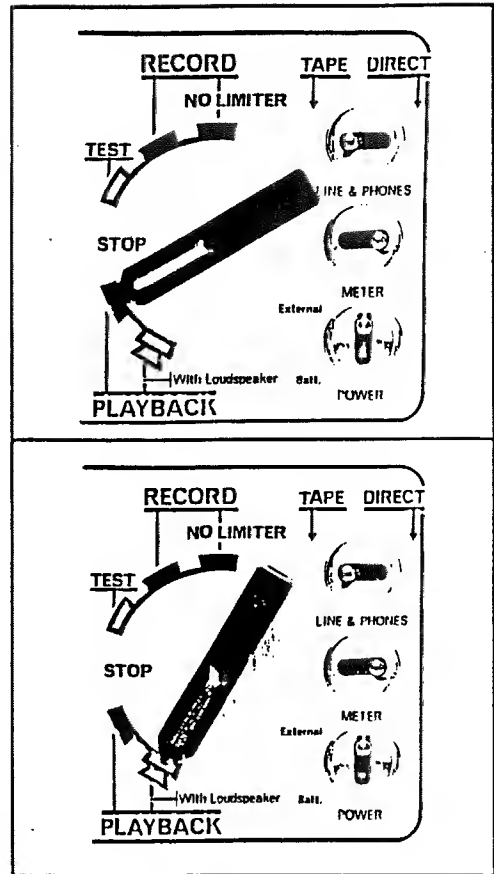
PLAYBACK: Playback will switch the Dolby SR cards to DECODE. With the 280B monitor selected to NORMAL, decoded playback will be monitored when rolling. In POWER-SAVE the monitor will switch to input when the ROLL/STOP switch is in the STOP mode.

The TAPE/ DIRECT switch on the Nagra IV-S *must always* remain in the TAPE position for calibrated playback.

Monitoring in the TAPE position on the 280B during playback will be the encoded signal before decode processing.

PLAYBACK With Loudspeaker :

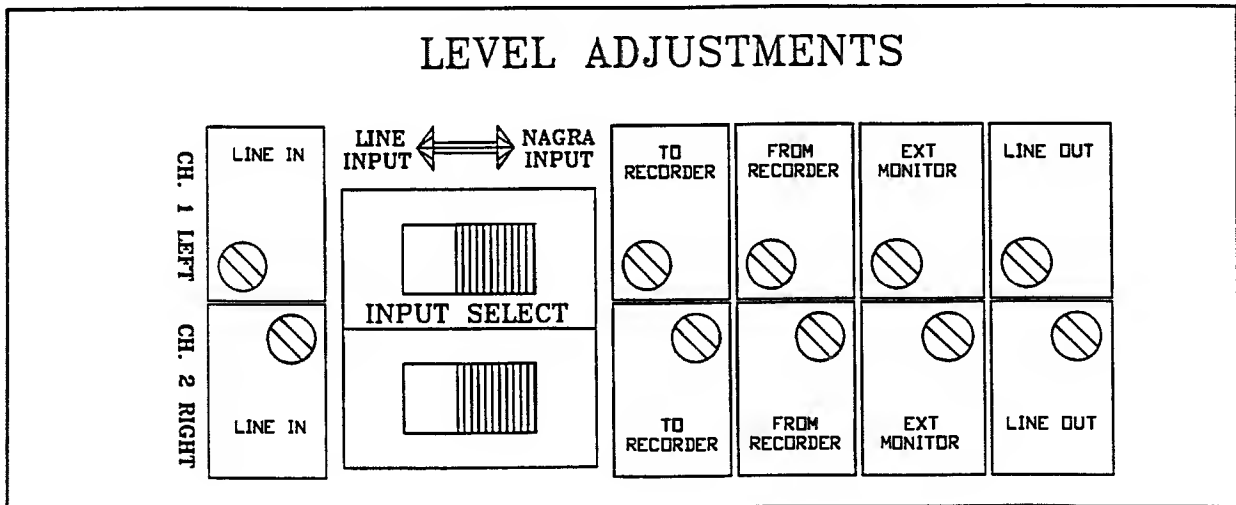
Same as with regular playback with the addition of encoded playback at the loudspeaker in the Nagra IV-S.



ALIGNMENT:

The audio calibration of the Nagra IV-S should be to Kudelski standard, and the 280B alignment procedures assume this fact.

The left side of the 280B contains a compartment where all audio adjustments are made. Remove the two screws and the compartment cover to reveal the trimpot adjustments. The diagram below shows the location of the trims and input switching. The top row adjusts channel 1 while the bottom row adjusts channel 2.



ALIGNMENTS:

INPUT SET-UP WHEN USING NAGRA INTERNAL MIXER

1. Select the 280B input selector switch to Nagra.
2. Select the 280B "Roll/STOP" switch to "STOP".
3. Select the Nagra "NORMAL/NRS" switch to "NRS".
4. Select the Nagra "TAPE/DIRECT" switch to "TAPE".
5. Select the Nagra main function switch to "RECORD NO LIMITER".
6. Press and hold the "REFERENCE OSCILLATOR" button on the Nagra and adjust the "TO RECORDER" trim pots until the levels on the Nagra modulometer are at the reference level of -8db. A quick check of the set-up is to switch the "NORMAL/NRS" switch on the Nagra back and forth and observe the modulometer. If the pointers do not move from reference (-8db) the set-up is correct. Adjust the "LINE OUTPUT" trims for the desired output level at the "LINE OUTPUT" connector. (Pin 1 is ch. 2, pin 3 is ch. 1).
7. Load a reel of audio tape for which the recorder has been set-up.
8. Select the 280B "ROLL/STOP" switch to "ROLL", and record for 30 to 60 seconds, the tone from the Nagra "REFERENCE OSCILLATOR". Check via the Nagra "METER" switch that the tone is reproducing correctly.(-8db)
9. Rewind the tape to the head of the recorded tone, and playback the recorded tone.
10. Adjust the "FROM RECORDER" trim on each channel so the modulometer reads -8DB

INPUT SET-UP WHEN USING EXTERNAL MIXER

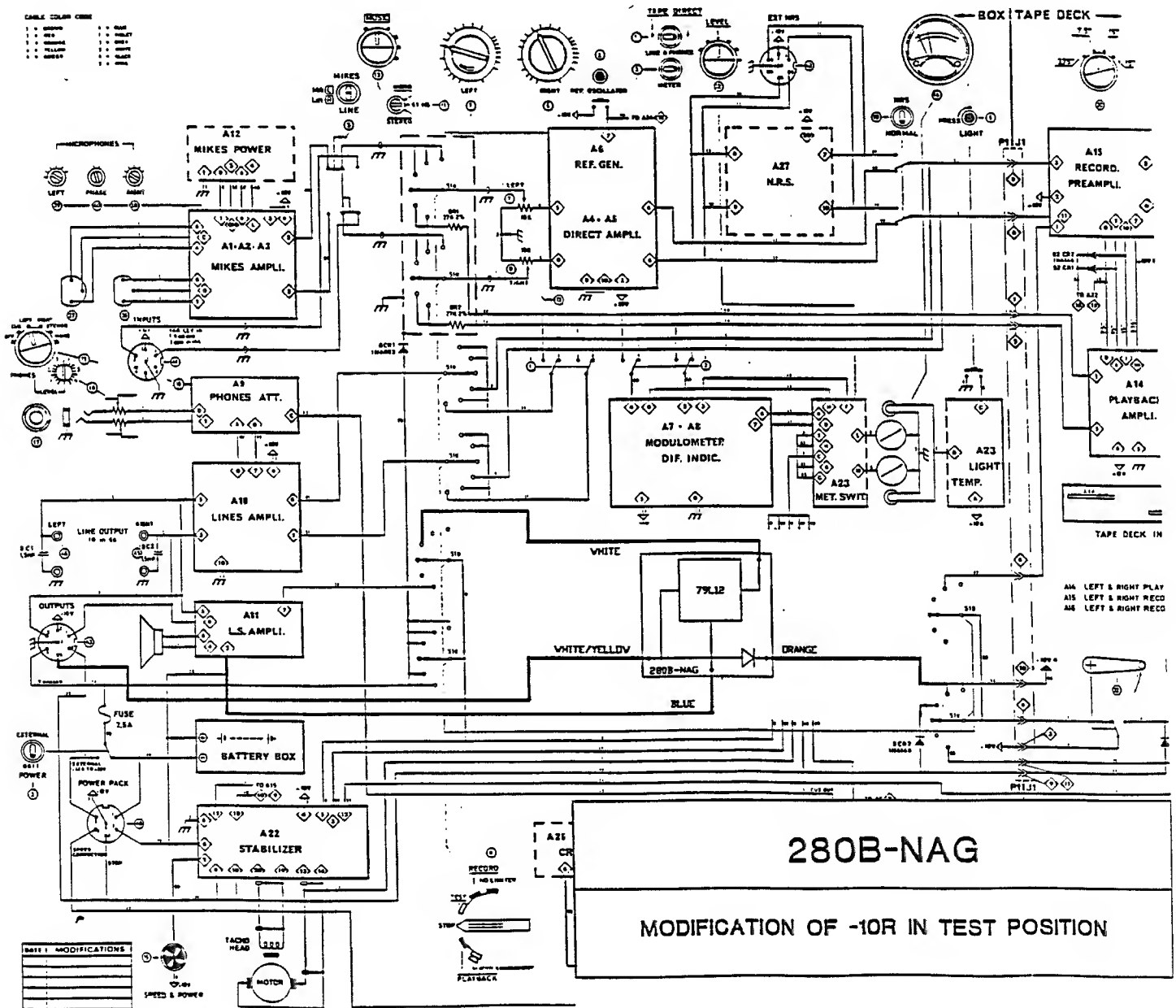
The mixer to be connected to the 280B must provide a reference output level before setup is possible. If the mixer has its own internal reference oscillator it may be used, otherwise connect an external audio oscillator to an input and set the reference with it. The mixer output is connected to the 280B via the "FROM MIXER" connector. The alignment is for one channel only, the other channel is the same procedure.

1. Set 1khz reference level at mixer output, and connect to "LINE INPUT" connector.
2. Select the 280B input switch to "Line input" (rear)
3. Select 280B "ROLL/STOP" switch to "STOP".
4. Select Nagra main function switch to "RECORD NO LIMITER".
5. Select the Nagra "NORMAL/NRS" switch to "NRS".
6. At the "METER" connector on the 280B, connect an a/c voltmeter, 3 volt scale, between pins 1 and 2 for ch 1 and pins 6 and 2 for ch 2.
7. Adjust the "LINE INPUT" trimpot for a reading of 1.85 volts on the a/c voltmeter.
8. Adjust the "TO RECORDER" trimpot for -8db reading on the Nagra modulometer. Adjust the "LINE OUTPUT" trim pot to the desired output level at the "LINE OUT" connector.
9. Load a roll of tape set-up for the recorder.
10. Select the 280B "ROLL/STOP" switch to "ROLL" and record 30 to 60 seconds of tone.
11. Rewind the recorded tape and playback the recorded tone. Adjust the "FROM RECORDER" trim pot for a reading of 1.85 volts on the a/c voltmeter, which will also be -8db on the Nagra modulometer.

MODIFICATION OF -10R IN TEST POSITION:

The 280B automatically changes from ENCODE to DECODE when the Nagra IV-S is switched from RECORD to PLAYBACK. It does this by sensing the presence of -10R from the recorder. This voltage is present only in the RECORD positions of the Nagra function switch. In TEST position -10R is not present, so the 280B operates as if the recorder is in playback. The recorder, however, is in input, which creates a loop, and feedback occurs.

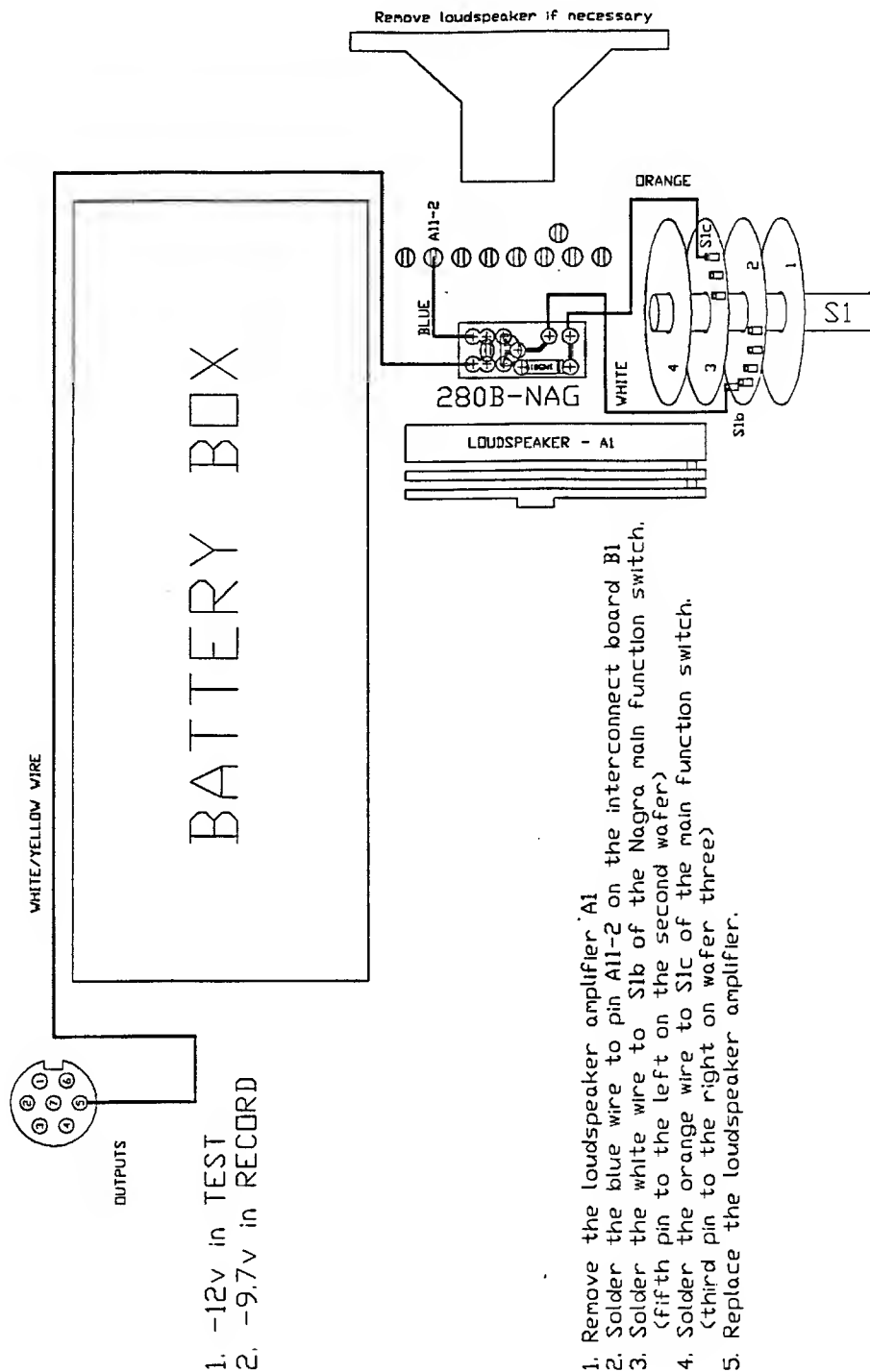
To prevent this from happening install the small circuit board (280B-NAG) in the Nagra and wire it according to the schematic supplied.



MODIFICATION
NAGRA IV-S
-10R IN "TEST"

DWG# 280B-NAG

NOV 22, 89



1. Remove the loudspeaker amplifier A1
2. Solder the blue wire to pin A11-2 on the interconnect board B1
3. Solder the white wire to S1b of the Nagra main function switch.
(fifth pin to the left of the second wafer)
4. Solder the orange wire to S1c of the main function switch.
5. (third pin to the right of the third wafer)
5. Replace the loudspeaker amplifier.

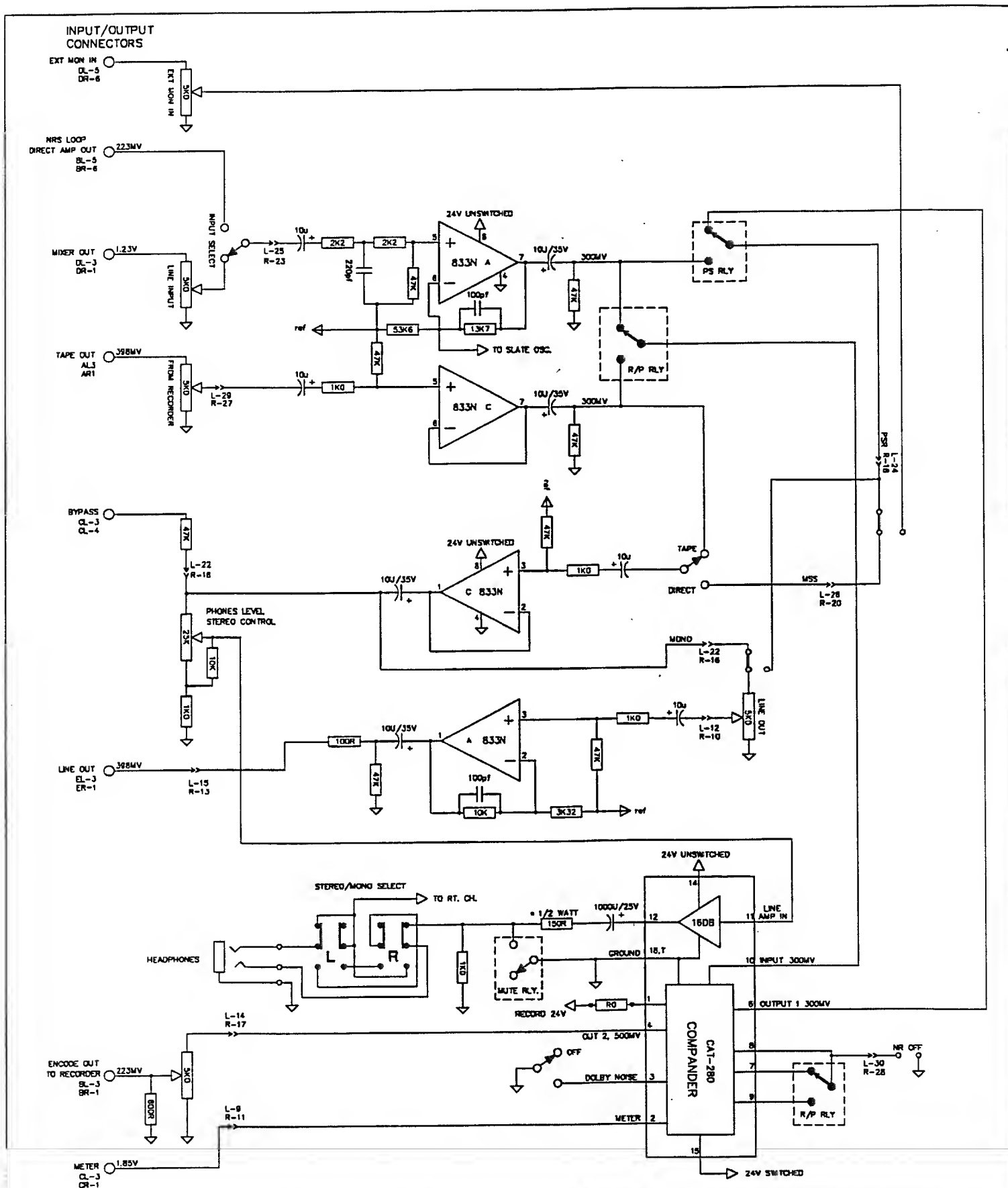
280B-NAG

BRYSTON LTD

57 WESTMORE DRIVE
PHONE: 416-746-1800

REXDALE, ONTARIO
FAX: 416-746-0308

CANADA M9V 3Y6
TELEX: 06-989548



R2.5 600R ADDED TO ENCODE OUT - 23-3-90

ALL RESISTERS ARE 1/4 WATT 1%
ONE CHANNEL ONLY SHOWN
OPAMPS A + C = CH. 1
OPAMPS B + D = CH. 2
">>" REFERS TO 30 PIN HEADER
PS = POWER SAVE
R/P = RECORD/PLAY

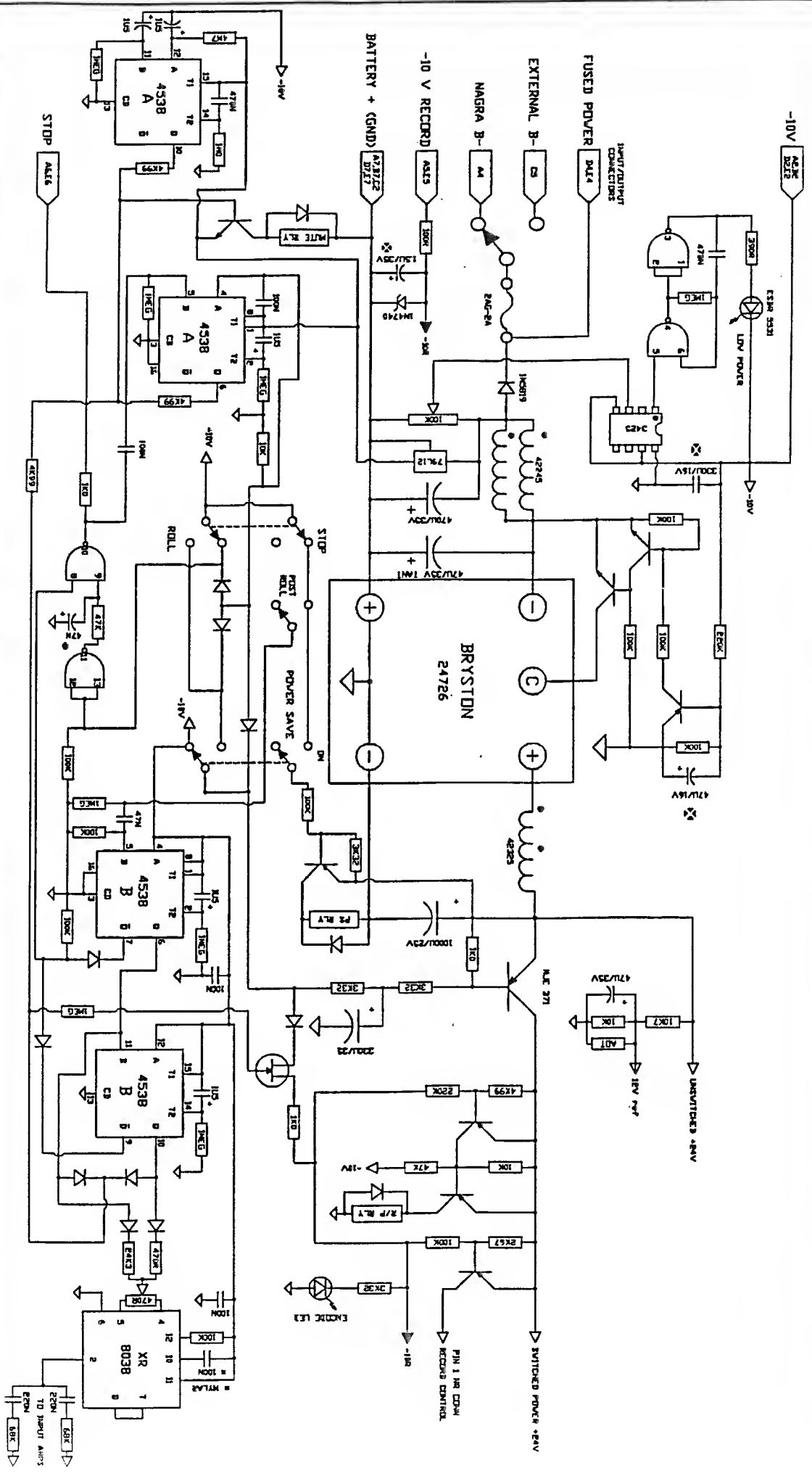
BRYSTON LTD
57 WESTMORE DRIVE REXDALE, ONTARIO CANADA M9V 3Y6
PHONE: 416-746-1800 FAX: 416-746-0308 TELE: 06-989548

280B - AUDIO

REV 2.5

DWG # 280BA

SEPT 12 89



R2.6 CHANGES 27-3-90

NOTES

- UNLESS OTHERWISE NOTED
- ALL RESISTORS ARE 1/4 WATT 1%
- ALL PNP TRANSISTORS ARE PNP
- ALL NPN TRANSISTORS ARE PNP
- WIND CAPS ARE PART OF KIT
- ALL DIODES ARE 1N4148
- FEET IS INCHES
- 1EV PWR IS ADJUSTED FOR SYMMETRICAL CLIPPING OF GRAPH



57 WESTMORE DRIVE
 REXDALE, ONTARIO CANADA M9V 3Y6
 PHONE: 416-746-1800 FAX: 416-746-0308
 TELEK: 06-989548

280B - CONTROL

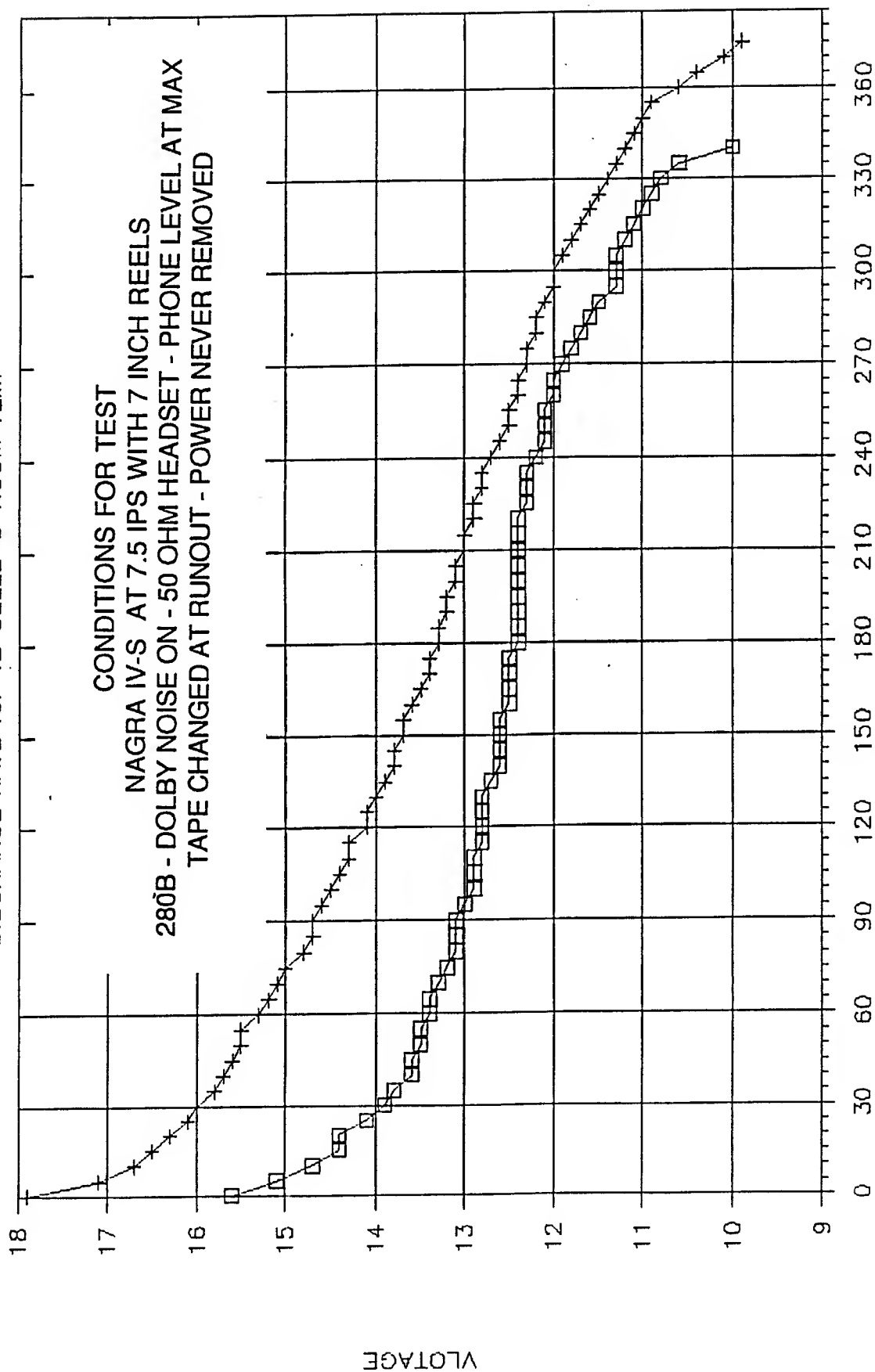


PORTABLE DUAL COLBY SR UNIT

CONSTANT RECORD TEST: IVS-TC + 280B

DISCHARGE RATE for 12 CELLS @ ROOM TEMP

CONDITIONS FOR TEST
NAGRA IV-S AT 7.5 IPS WITH 7 INCH REELS
280B - DOLBY NOISE ON - 50 OHM HEADSET - PHONE LEVEL AT MAX
TAPE CHANGED AT RUNOUT - POWER NEVER REMOVED



□ DURACELL MN1300
+ ENERGIZER E95

280B TO NAGRA 4.2

CONNECTIONS: Connect the 'Y'-adaptor between the "Mixer" connector on the 4.2 to the 'NRS' connector and the "From Nagra Out" connector on the 280B.

The input is made to the 280B via the "Input From Mixer" connector on pins 3 (hot) and pin 7 (ground). The input selector switched to "LINE IN" for channel 1.

The input selector switch on channel 2 is selected to "Nagra input".

The output can be taken from the "Line Out" connector on the 280B on either the channel 1 or 2 outputs. The output is also available at the headphone connector. The headphone monitor is two channel, so STEREO HEADPHONES must be used with a load impedance not less than 50 ohms. (Do not use a 2-conductor plug for headphones, or it may damage the headphone amplifier).

OPERATION: The 280B-4.2 operates differently from the stereo version:

The operation is mono input with simultaneous decoded output.

The "Tape-Normal" monitor switch on the 280B selects input in the "Normal" position and decoded playback in the "Tape" position.

The "Mono/Stereo" switches will be mono in either position.

When Power Save is engaged, nothing will be heard in the "Tape" position of the monitor select switch.

The Encode light remains on at all times when the recorder is not in the "Stop" position on the main function switch.

ALIGNMENT: The input to the recorder must come from the external input on the 280B. This input requires no input resistors. With an audio frequency oscillator, set a "0db" level at the mixer output as referenced to its VU-meter. Adjust the channel 1 "external line input" trimpot in the adjustments section for a level of 1.85-1.95VAC between pins 1 (hot) and pin 2 (gnd) of the "METER" connector.

Adjust the Ch. 1 "To Recorder" trim pot until the meter on the Nagra 4.2 reads -8 DB.

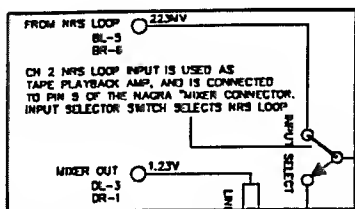
Place the recorder in record and record the tone from the mixer. The playback amplifier in the 4.2 is fed to the 280B at the NRS connector on pin 1. This is the Ch. 2 Input From Nagra input. The correct playback level can be read at the "Meter" connector on pins 6 (hot) and pin 2 (gnd). This level should read between 1.85-1.95 VAC. If this is not the case check if the output level from the recorder is 223mV when the Nagra is playing back the recorded tone.

The line output can then be adjusted using the line output trimmers. Both outputs are active, and should be adjusted to the appropriate level.

INPUT/OUTPUT CONNECTORS

EXT MON IN
DL-3
DR-6

NR MON L33



TAPE OUT
AL3
AR1

FROM RECORD

BYPASS
CL-3
CL-4

L-22
R-16

PHONES LEVEL
STEREO CONTROL

LINE OUT
DL-3
DR-1

L-15
R-13

ENCODE OUT
BL-3
BR-1

METER
CL-3
CR-1

L-14
R-17

L-9
R-11

24V UNSWITCHED

833N A

100pF

1.3K7

TO SLATE OSC

833N C

100pF

1K0

100/35V

3K32

100/35V

1K0

100/35V

100R

100/35V

100R

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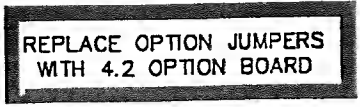
100/35V

100R

100/35V

100R

Drystone
 280B MAIN BOARD
 PORTABLE DUAL DOLBY SR UNIT
 File: 280B-MB1 Rev 2.5
 Part No: 280B-MB 14 Oct 89



- 1 REMOVE BOTH RELAYS AND REPLACE WITH CIRCUIT BOARD 280B-4.2
- 2 REMOVE 833C + 833D
PLACE JUMPER BETWEEN PINS 2+3

280B-SD SET-UP

Refer to the diagram 280B-SD.

Connect cable "A" between the "outputs" connector on the Nagra IV-S and the "From Nagra Output" connector on the 280B. (This is the upper connector at the rear. The lower connector is not used.)

Connect cable "B" between the "EXT NRS" connector on the Nagra and the bottom of the two "EXT NRS" connector on the 280B. (The upper "NRS" connector is not used.)

Connect the "C" cable between the "INPUT FROM MIXER" connector on the top row of the 280B and the "LINE OUTPUT" connector on the bottom row of the 280B

Power to the 280B is selected by using the slide switch to the right of the upper "LINE OUTPUT" connector. In the Nagra position power is derived from the Nagra , which will follow the power select switch on the Nagra. When powering from the Nagra batteries it will be necessary to increase the internal fuses. There are three fuses in the battery compartment which appear as battery terminals. Remove the old fuses and replace with the 5 amp fuses supplied. Also there is a fuse inside the recorder, usually near the external power input connector. this fuse will also need to be 5 amps.

Nagra "ATN" type power supplies are not capable of powering the 280B and the Nagra together so should not be used. The "ELPAC" supply will power both units and can be connected to the Nagra "EXTERNAL POWER" connector.

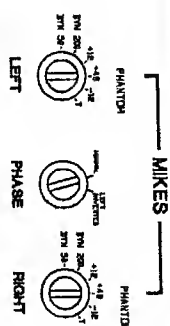
The 280B can also be powered separately from the Nagra by switching the POWER SELECT" switch on the 280B to "EXT" and applying power via the upper "METER" connector. The "ELPAC" power supply can be used or any well filtered power between 10 to 30 volts. Pin 2 is ground (positive) and pin 5 is the Negative power input. The supply should be capable of at least 10 watts of power.

Should batteries be used be aware of the increased power consumption. Tests done using fresh alkaline batteries in the Nagra with only two channels of "SR" gave continuous use of about five hours. We have not run tests using four "SR" cards but battery life should not be considered to be more than a couple of hours.

"INPUTS" The 280B will accept inputs from the Nagra input section or from an external source. Either channel can select either source. Remove the lower cover plate marked "ADJUSTMENTS". This will reveal a pair of selector switches flanked by trim pots. These are the input selector switches. When selected to the front of the unit the input will be from the Nagra direct amplifier, and when selected to the rear the input is from the "INPUT FROM MIXER" connector on the bottom row. This input may be trimmed via the trimpot to the left of the input select switch. The top row controls channel 1 and the bottom row channel 2.

When the input is selected from the Nagra there is no input trim to make. When the input is selected to "LINE INPUT" the input will be calibrated via the trims to the left of the selector switches.

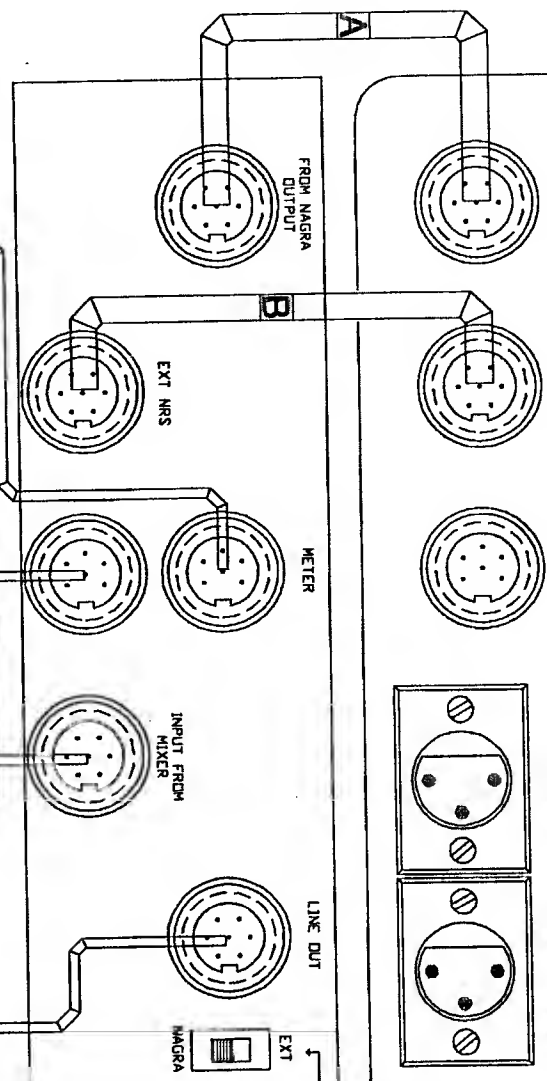
NAGRA IV-S



POWER SELECT

"EXT" POWER APPLIED TO PIN 5 OF THE DECODE METER CONNECTOR -10V TO -30 VOLTS DC GROUND TO PIN 2 (POSITIVE +)

"NAGRA" POWER FROM NAGRA POWER SELECT SWITCH (FUSES IN NAGRA NEED TO BE CHANGED TO 5AMPS FOR BATTERY OPERATION)



DECODE METER

- ADJUST "FROM RECORDER" TRIMS FOR 1.85VAC WHEN MODULEMETER READS -80B
1. CH. 1 CAT 280 METER OUT (DECODE)
 2. GND
 5. EXTERNAL POWER INPUT (-10V TO -30V)
 6. CH. 2 CAT 280 METER OUT (DECODE)

INPUT CABLE

- INPUT IMPEDANCE 5K
USE NO SERIES RESISTERS *
1. CH. 2 (RIGHT) LINE INPUT
 2. -10V NAGRA
 3. CH. 1 (LEFT) LINE INPUT
 7. GND

ENCODE METER

- ADJUST "LINE INPUT" TRIMS FOR 1.85 VAC WHEN REFERENCE LEVEL AT "LINE INPUT"
- "NAGRA" SOURCE HAS NO ADJUSTMENT
1. CH. 1 CAT 280 CARD METER OUT (ENCODE)
 2. GND
 6. CH. 2 CAT 280 CARD METER OUT (ENCODE)

OUTPUT CABLE

1. CH. 2 (RIGHT) LINE OUTPUT
2. -10V NAGRA
3. CH. 1 (LEFT) LINE OUTPUT
4. B- FROM POWER SELECT SW
7. GND

ALIGNMENT "LINE INPUT" SOURCE

1. APPLY 1KHZ REFERENCE LEVEL AT THE LINE INPUTS AND ADJUST TRIMS FOR A READING OF 1.85 VAC AT THE ENCODE METER CONNECTOR
2. SELECT THE "NORMAL/NRS" SWITCH ON THE NAGRA TO "NRS"
3. ADJUST THE "TO RECORDER" TRIMS FOR A MODULEMETER READING OF -80B
4. SELECT THE "TAPE/DIRECT" SWITCH ON THE "NAGRA" TO "DIRECT"
5. ADJUST THE "FROM RECORDER" TRIMS FOR A READING OF 1.85 VAC AT THE "DECODE METER" CONNECTOR
6. SELECT THE "TAPE/NORMAL" MONITOR SWITCH TO NORMAL
7. ADJUST THE "LINE OUTPUT" TRIMS FOR THE DESIRED OUTPUT LEVEL AT THE LINE OUTPUT CONNECTOR

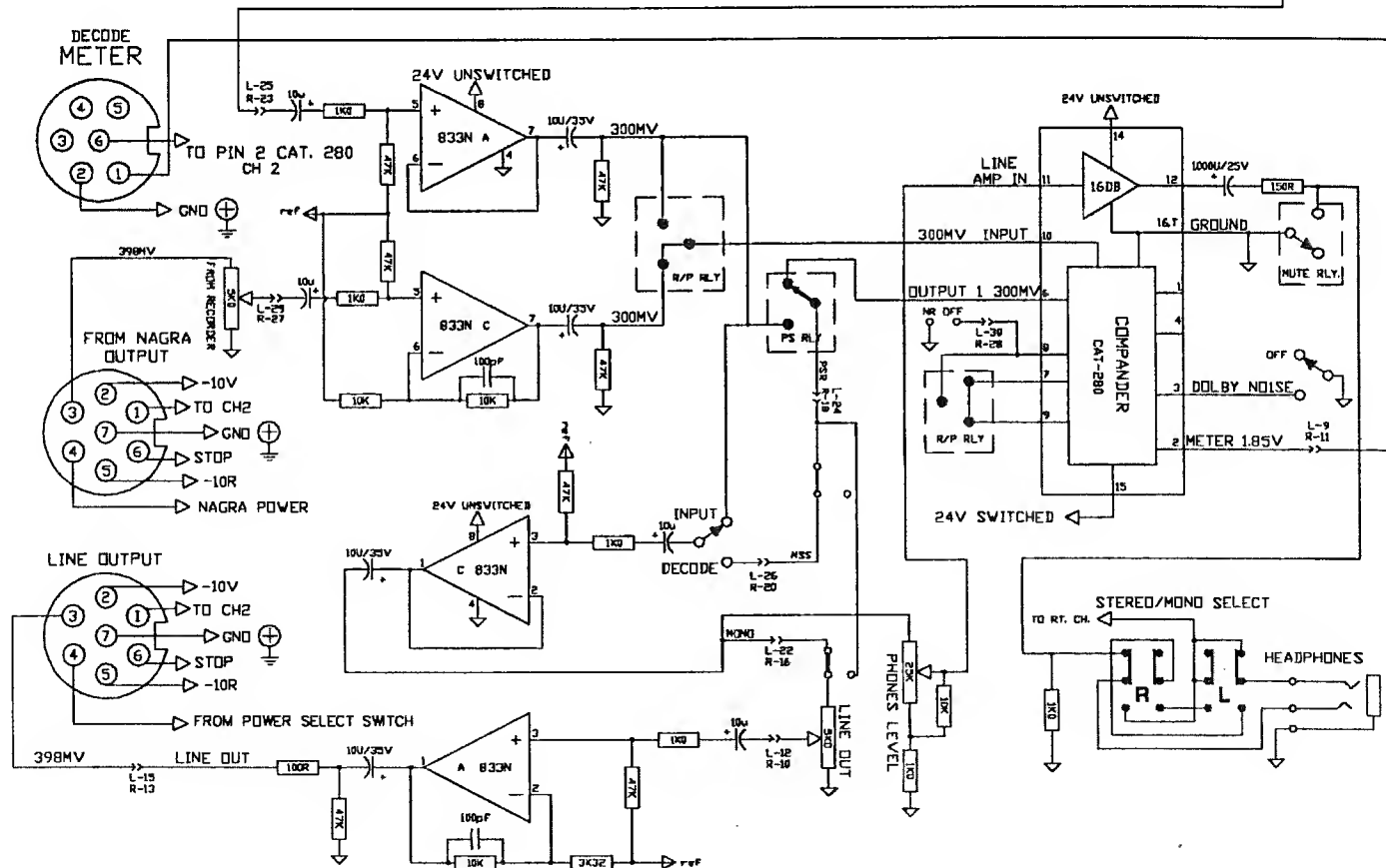
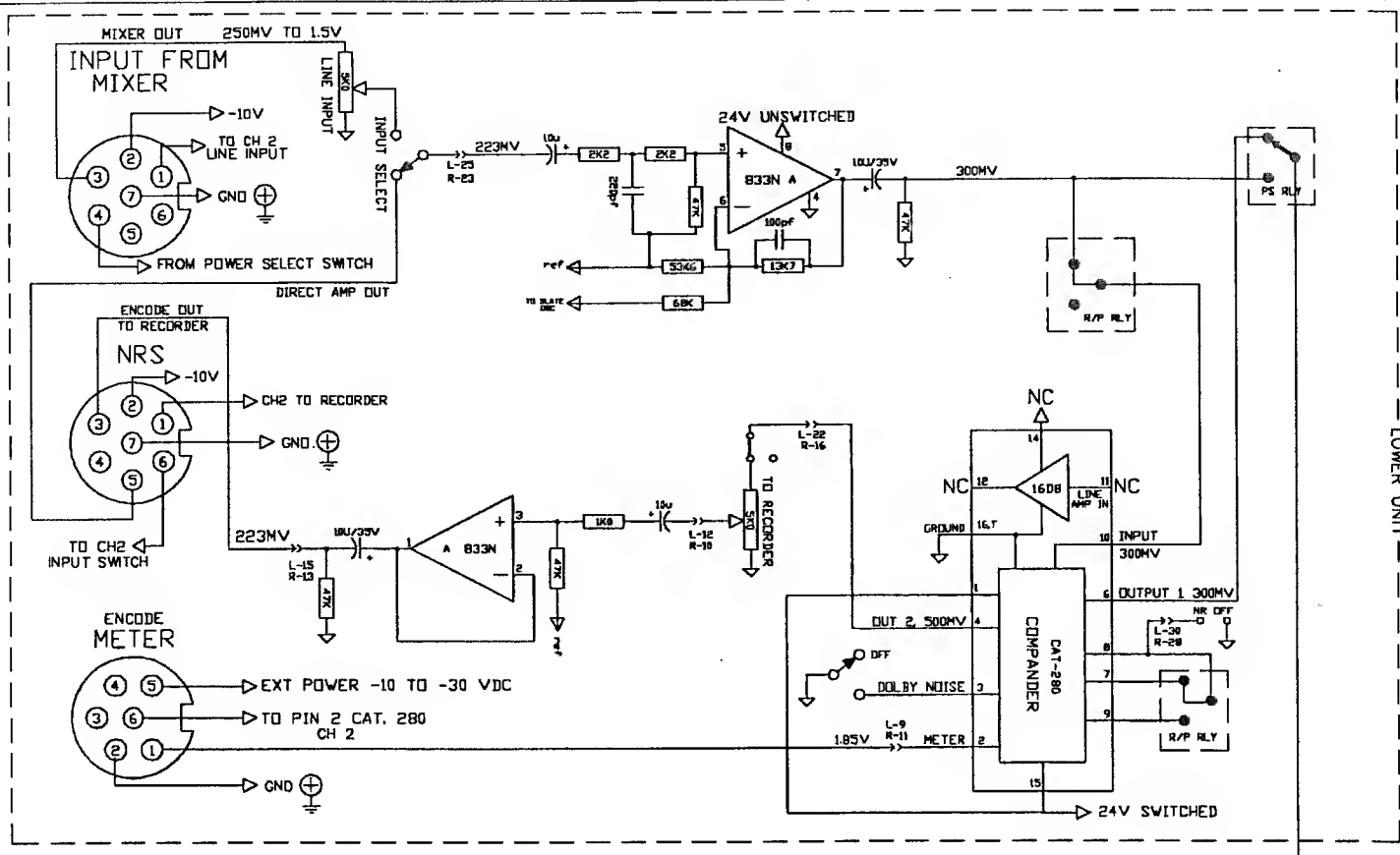
ALIGNMENT "NAGRA" SOURCE

SELECT "INPUT SELECTOR" SWITCH TO THE RIGHT (FRONT) WHILE PRESSING THE OSCILLATOR SWITCH ON THE "NAGRA". ADJUST THE "TO RECORDER" TRIMS FOR A MODULEMETER READING OF -80B. THERE IS NO INPUT ADJUSTMENT. USING THE "NAGRA" OSCILLATOR FOLLOW STEPS 4-7 AS ABOVE

INTERFACE FOR

NAGRA IV-S AND 280B-SD

280B-SD



ALL REFERENCE VOLTAGES ARE REFERENCED TO -80dB MODULOMETER

>> REFERS TO 30 PIN HEADER

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280B-SD-AUDIO

REV 2.0 DWG# 480B-A JUNE 3 1990